

AMENDMENT AND RESPONSE AND SUMMARY OF PERSONAL INTERVIEW WITH THE EXAMINER

Ser No. 10/666,573

February 1, 2005

Amendment

In the Specification:

At page 5, please amend the paragraph beginning at line 1, as follows:

--Possible ingredients of the coating composition of the invention are as follows:

- (a) A preferred phosphorous containing material which decomposes on contacting fire is ammonium polyphosphate obtainable as ~~Exolit~~ EXOLIT<sup>TM</sup> AP462 and AP422 from Clariant.
- (b) A hydroxylated thermosetting resin is a preferred binder component. The preferred thermosetting resins are epoxy resins and a suitable epoxy resin is a ~~diglycidyl~~ diglycidyl ether of bisphenol A (Molecular Weight approximately 1800) known as 663 UE obtainable from the Dow Chemical Company. The thermosetting resin also serves to control the stiffness of the coating.
- (c) A suitable curing agent (epoxy hardener) for the thermosetting epoxy resin is a phenolic resin DEH 82 which again is obtainable from the Dow Chemical Company.
- (d) Preferred thermoplastic binders are aldehyde and ketone resins. A suitable ~~aldehyde~~ ketone resin is LAROPAL<sup>TM</sup> ~~Laropal~~ A81 and a further suitable aldehyde resin is LAROPAL<sup>TM</sup> ~~Laropal~~ A101 both obtainable from BASF. A81 ~~ketone resin~~ and A101 aldehyde ~~resins~~ resin have a very low melt viscosity which can assist the extruder processing of the coating ingredients. The A81 resin and/or A101 gives plasticity to the binder system and this increased plasticity makes for easier foaming of the carbonaceous material when formed.
- (e) The optional melt viscosity modifier is an extrusion aid, e.g. hydrogenated castor oil obtainable as ~~Thixcin~~ <sup>TM</sup> THIXCIN<sup>TM</sup> from Rheox. The hydrogenated castor oil reduces the viscosity of the binder system during the extrusion process and during the coalescence phase of the curing cycle.
- (f) A colouring agent may be included in the coating composition to impart colour and opacity to the paint. The white pigment titanium dioxide can be used and since titanium dioxide is a high temperature resistant mineral (manufactured by

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calcination at approximately 1000°C) it also assists in maintaining the structure of the char.

(g) Other materials which can be included in the coating composition of the invention are:

- (i) china clay (e.g. bentonite) as a stabilising agent;
- (ii) melamine phosphate as a stabilising agent, additional blowing agent and additional source of phosphorous material;
- (iii) vitrifiers, e.g. zinc borate;
- (iv) metal salts to impart various properties; and
- (v) melamine to give enhanced blowing effect.--

Please amend the Table on page 7, line 7 of the instant specification, as follows:

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Ex	Epoxy Resin	Phenolic Curing Agent	Aldehyde Ketone Resin	THIXCIN™	Ammonium Polyphosphate	TiO <sub>2</sub>
				Thixein		
1	18.0	6.0	10.0	3.5	55.0	7.5
2	18.0	6.0	10.0	3.5	57.5	5.0
3	15.0	5.0	14.0	3.5	57.5	5.0
4	18.0	6.0	6.5	7.0	57.5	5.0
5	16.5	5.5	8.5	7.0	57.5	5.0
6	22.5	7.5	15	-	50.0	5.0

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Please amend the paragraph at page 7, lines 7-8 of the instant specification, as follows:

--The ~~aldehyde~~ketone resin of the above Examples can be replaced with a ~~ketone~~an-aldehyde resin to give similar effects.--

**In the Claims:**

Please amend claims 1, 5, 8, 14, 15, 16, 17 and 18, as follows:

1. (currently amended) A fire retardant intumescent coating composition comprising:

- (a) 3 to 60% by weight of a phosphorous containing material which decomposes to produce phosphoric acid when the coating is exposed to fire;
- (b) 10 to 30% by weight of a thermosetting binder;
- (c) 2.5 to 10% by weight of a curing agent for the thermosetting binder; and
- d) 5 to 40% by weight of a thermoplastic binder comprising an oxygenated heterocyclic thermoplastic resin,

wherein each the active groups of the thermosetting and thermoplastic binders comprise groups that react with the said phosphoric acid, thereby impartingare chosen so as to impart charring and blowing functions to the intumescent coating composition.

2. (original) A fire retardant intumescent coating composition according to claim 1 wherein the binder system accounts for 30% or more by weight of the composition.

3. (previously presented) A fire retardant intumescent coating composition according to claim 1 wherein the phosphorous containing material is a sodium, potassium or ammonium polyphosphate.

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4. (previously presented) A fire retardant intumescent coating composition according to claim 1 wherein the thermosetting binder is a hydroxylated thermosetting resin.
5. (currently amended) A fire retardant intumescent coating composition according to any one of claims 1 to claim 4 wherein the thermosetting resin is an epoxy resin.
6. (previously presented) A fire retardant intumescent coating composition according to claim 1 wherein the curing agent for the thermosetting binder is a phenolic curing agent.
7. (canceled).
8. (currently amended) A fire retardant intumescent composition according to claim 17 wherein the thermoplastic is an aldehyde or ketone resin.
9. (previously presented) A fire retardant intumescent coating composition according to claim 1 containing 0.1 to 10% by weight of a melt viscosity modifier.
10. (original) A fire retardant intumescent coating composition according to claim 9 wherein the melt viscosity modifier is hydrogenated castor oil.
11. (previously presented) A fire retardant intumescent coating composition according to claim 1 containing 1 to 10% by weight of a colouring agent.
12. (original) A fire retardant intumescent coating composition according to claim 11 wherein the colouring agent is titanium dioxide.

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13. (previously presented) A fire retardant intumescent coating composition according to claim 1 containing one or more additives selected from the group consisting of a china clay, melamine phosphate, vitrifiers, metal salts and melamine.

14. (currently amended) A fire retardant intumescent powder coating composition comprising the following components:

- (a) 30 to 60% by weight of a phosphorous containing material which decomposes to produce phosphoric acid when the coating is exposed to fire;
- (b) 10 to 30% by weight of a thermosetting binder;
- (c) 2.5 to 10% by weight of a curing agent for the thermosetting binder; and,
- (d) 5 to 40% by weight of a thermoplastic binder;
- ~~(e) 0 to 10% by weight of a melt viscosity modifier; and,~~
- ~~(f) 0 to 10% by weight of a colouring agent~~

in which a)-~~(d)~~(f) must always add up to 100% by weight, ~~and~~ wherein each of the said active groups of the thermosetting and thermoplastic binders comprise groups that react with the said phosphoric acid, thereby imparting ~~are chosen so as to impart charring and blowing function to the intumescent coating composition, and,~~  
further wherein, the said composition is made by a process comprising premixing the said components (a)-(d), extruding the premix, and grinding the thus formed extrudate to form a powder.

15. (currently amended) A ~~fire retardant intumescent coating composition~~ according to claim 14 wherein the thermosetting resin is a hydroxylated thermosetting resin.

16. (currently amended) A ~~fire retardant intumescent coating composition~~ according to claim 15 wherein the thermosetting resin is an epoxy resin.

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17. (currently amended) A ~~fire-retardant intumescent coating~~ composition according to any one of claims 14 to 16 wherein the thermoplastic resin is an oxygenated heterocyclic thermoplastic resin.

18. (currently amended) A ~~fire-retardant intumescent coating~~ composition according to claim 17 wherein the thermoplastic resin is an aldehyde or ketone resin.

19. (canceled).